C. 800 AND 900 MHZ BAND PLANS - CANADIAN BORDER REGION II

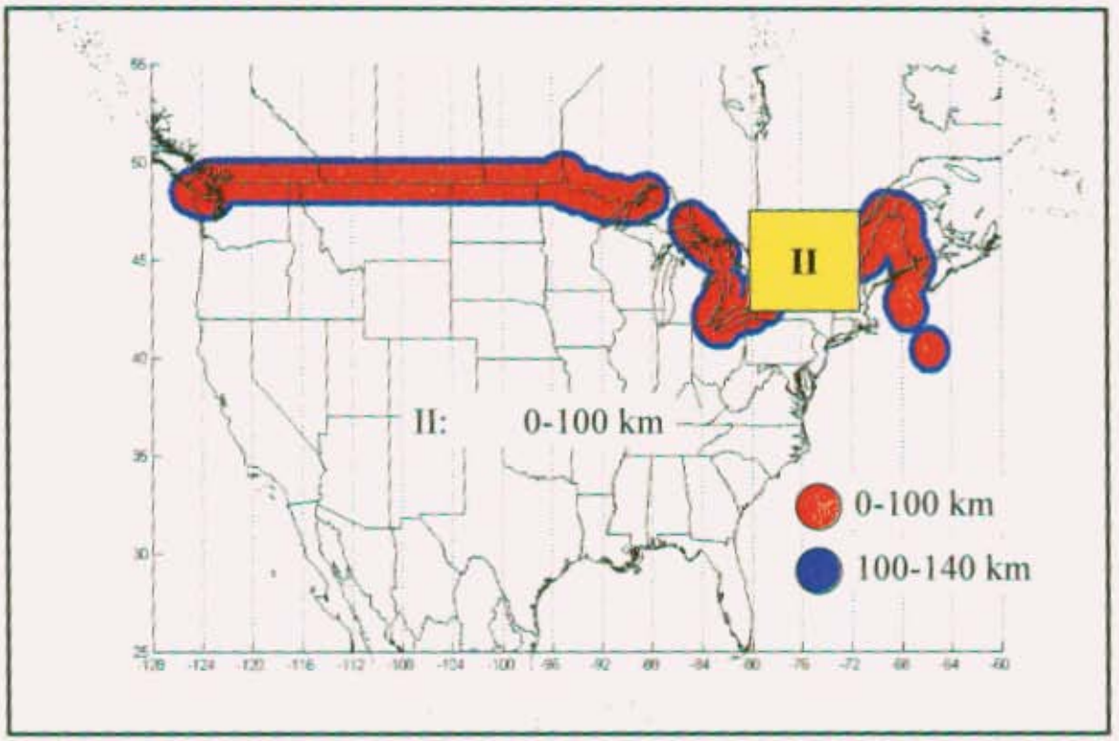


Figure C-1: Canadian Region II

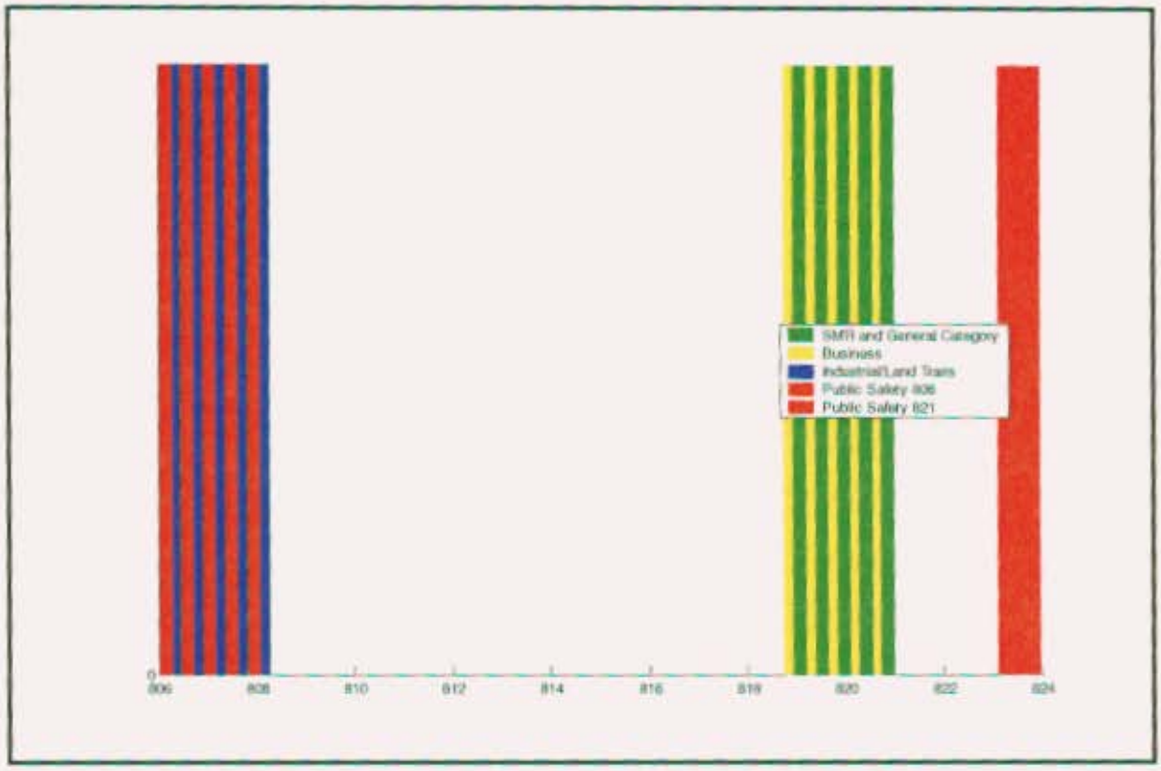


Figure C-2: US 800 MHz Band Plan, Canadian Region II

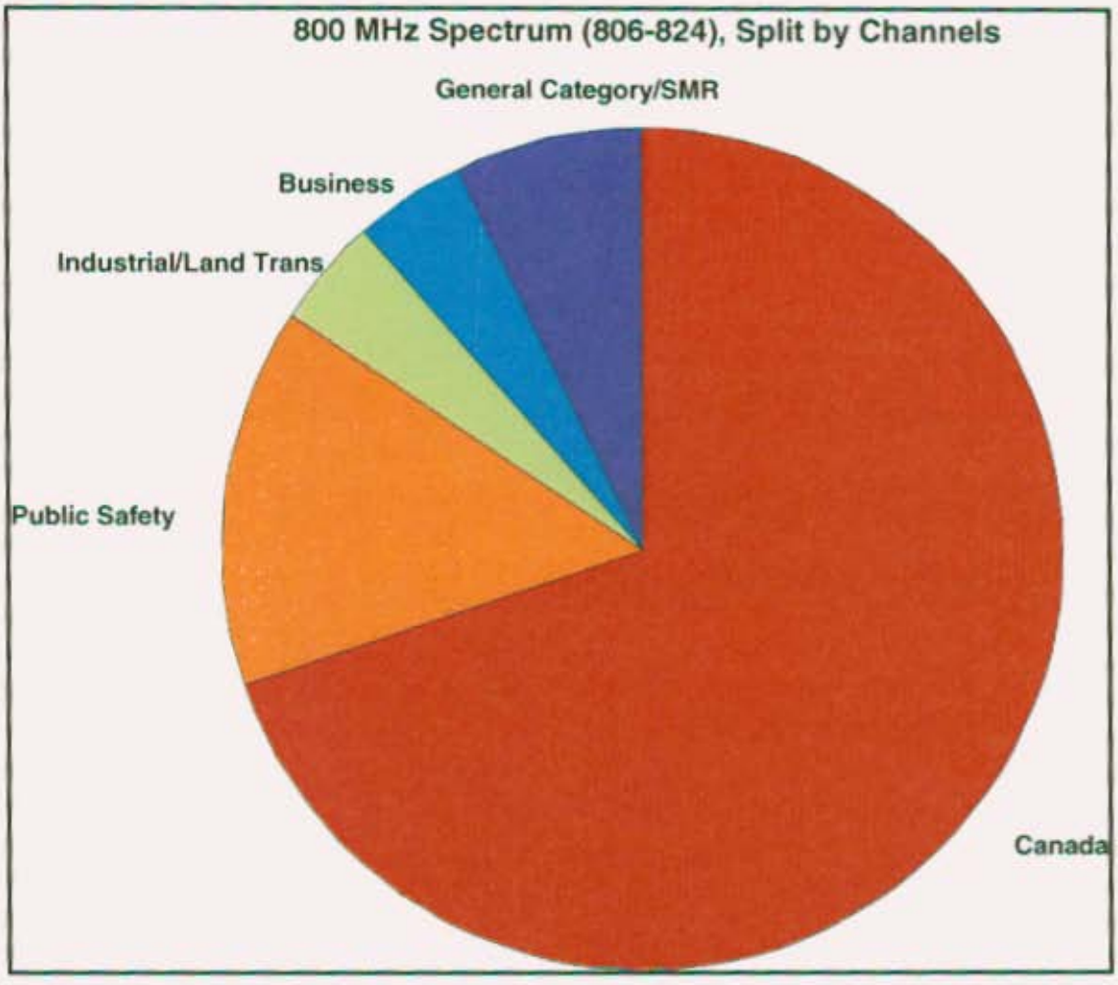


Figure C-3: US 800 MHz Band Plan, Canadian Region II, Split by Channels

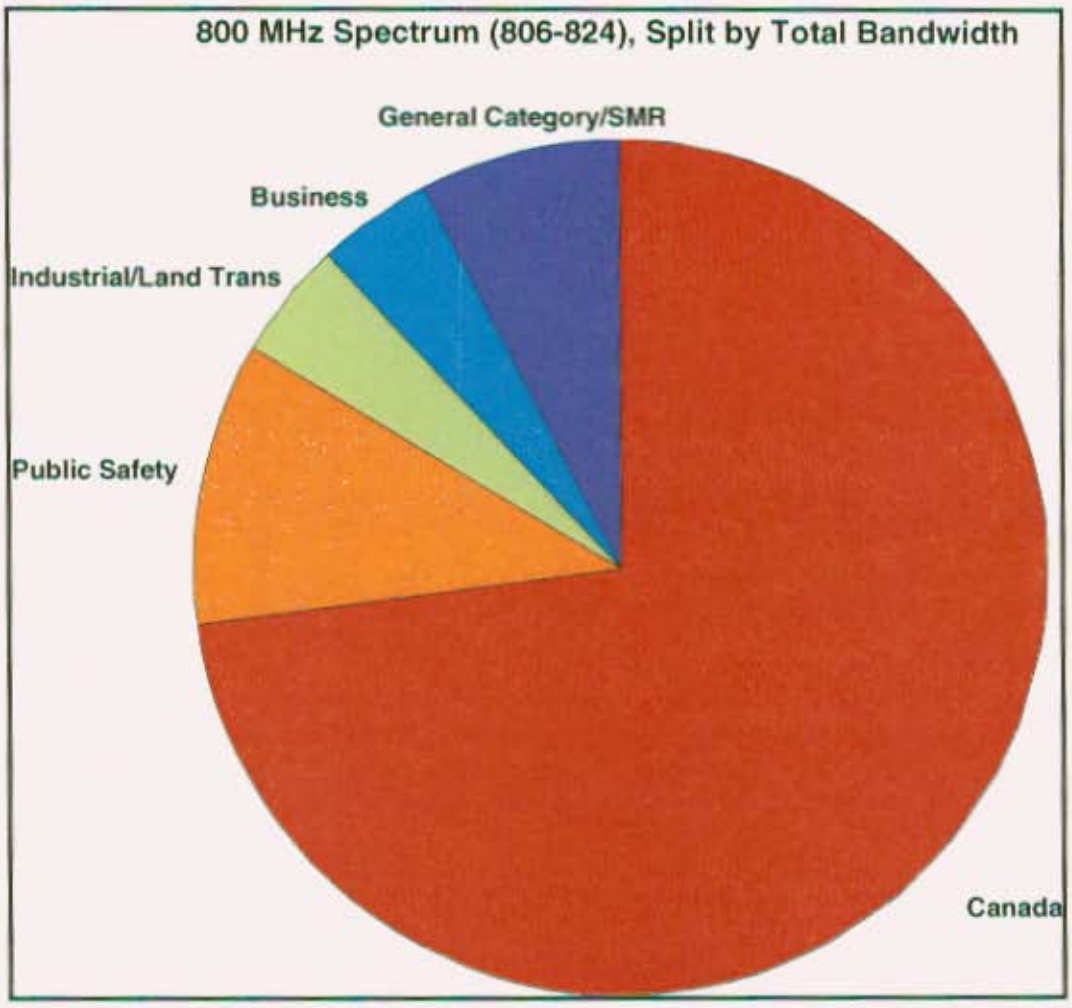


Figure C-4: US 800 MHz Band Plan, Canadian II, Split by Bandwidth

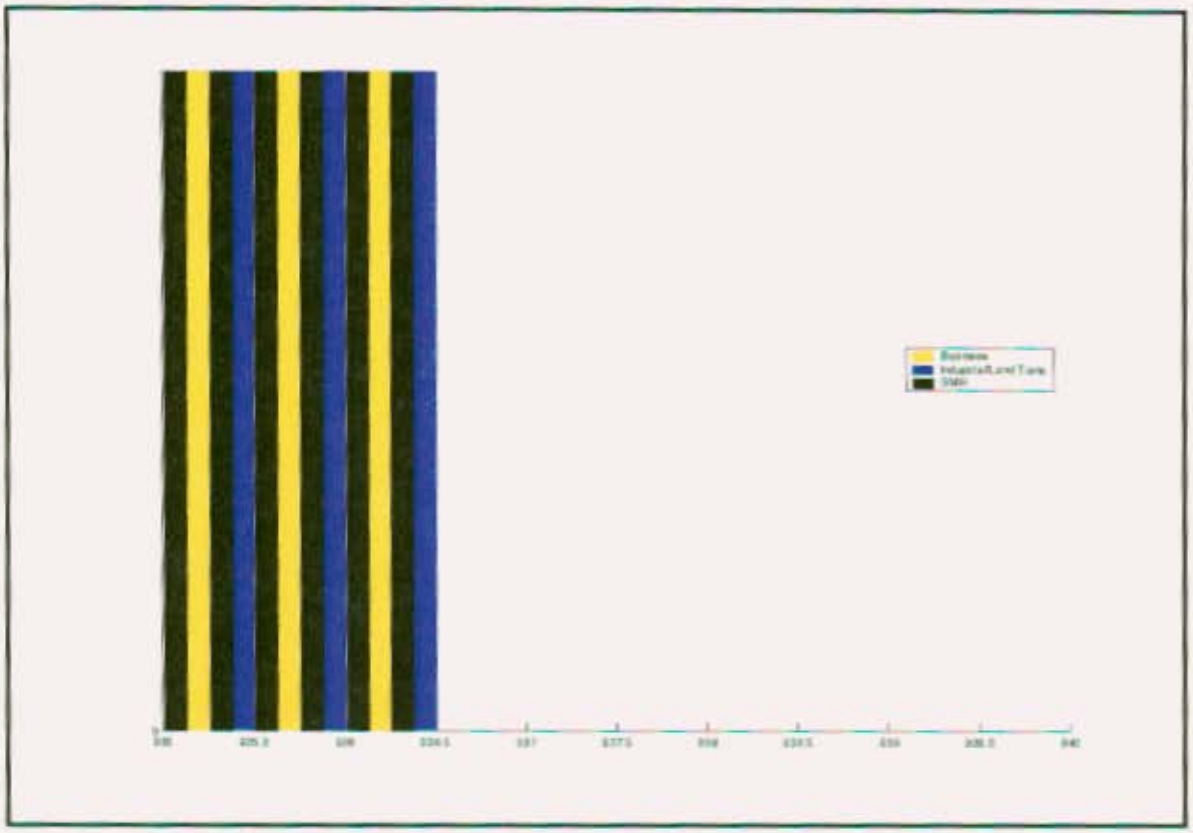


Figure C-5: US 900 MHz Band Plan, Canadian Region II

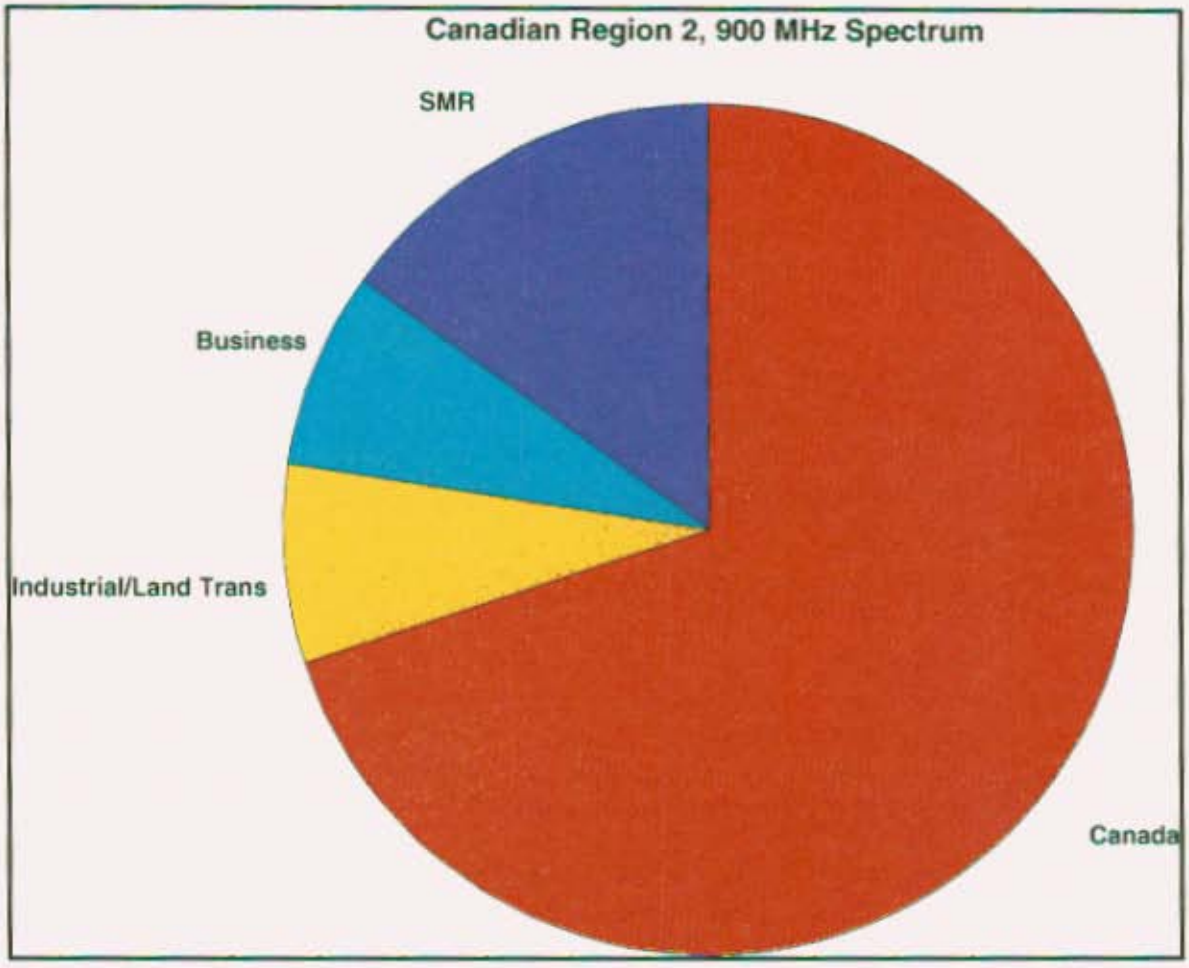


Figure C-6: US 900 MHz Band Plan, Canadian Region II, Split by Bandwidth

D. 800 AND 900 MHZ BAND PLANS - CANADIAN BORDER REGION III

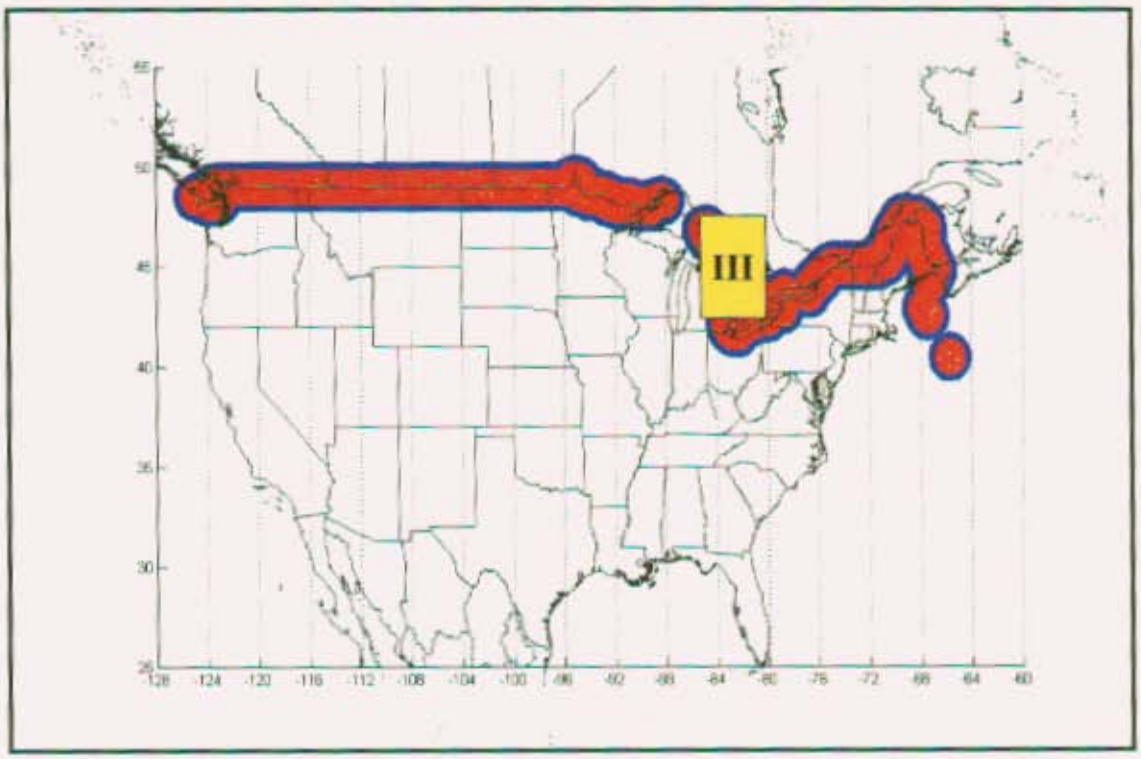


Figure D-1: Canadian Region III

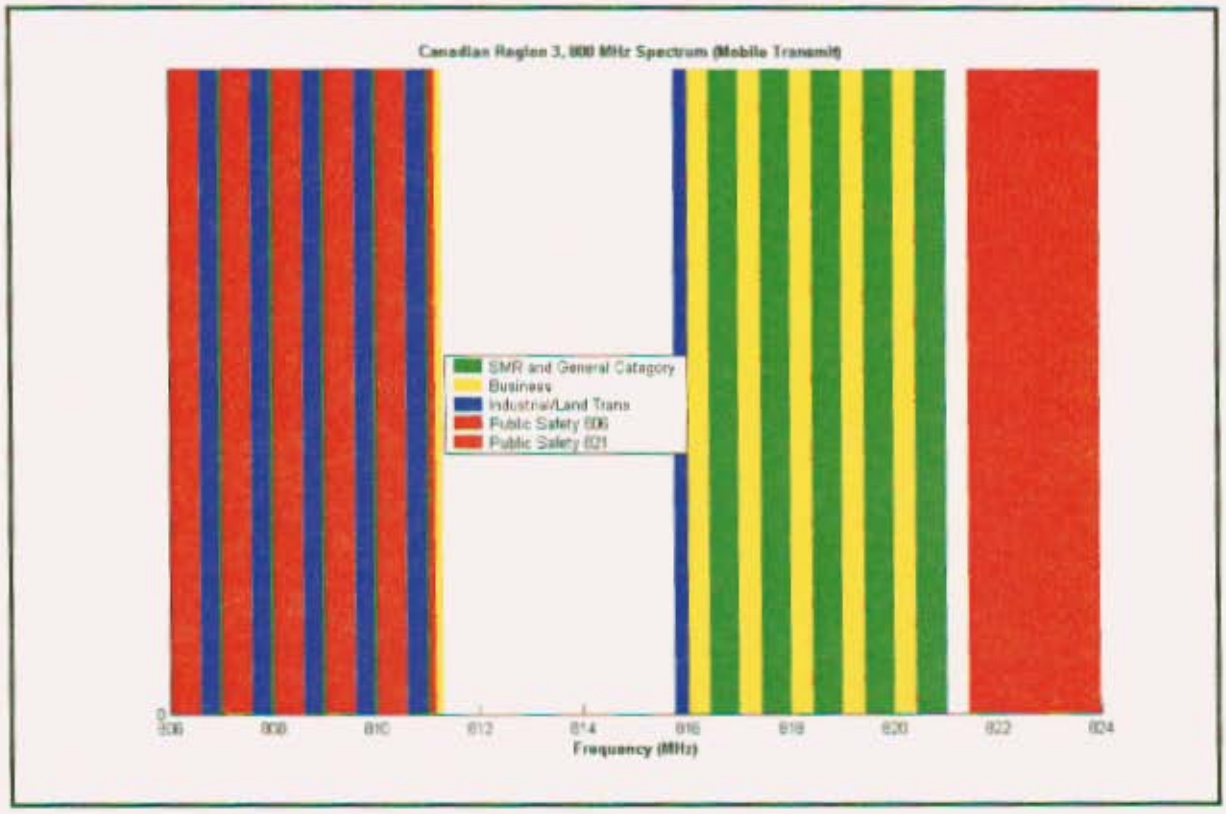


Figure D-2: US 800 MHz Band Plan, Canadian Region III

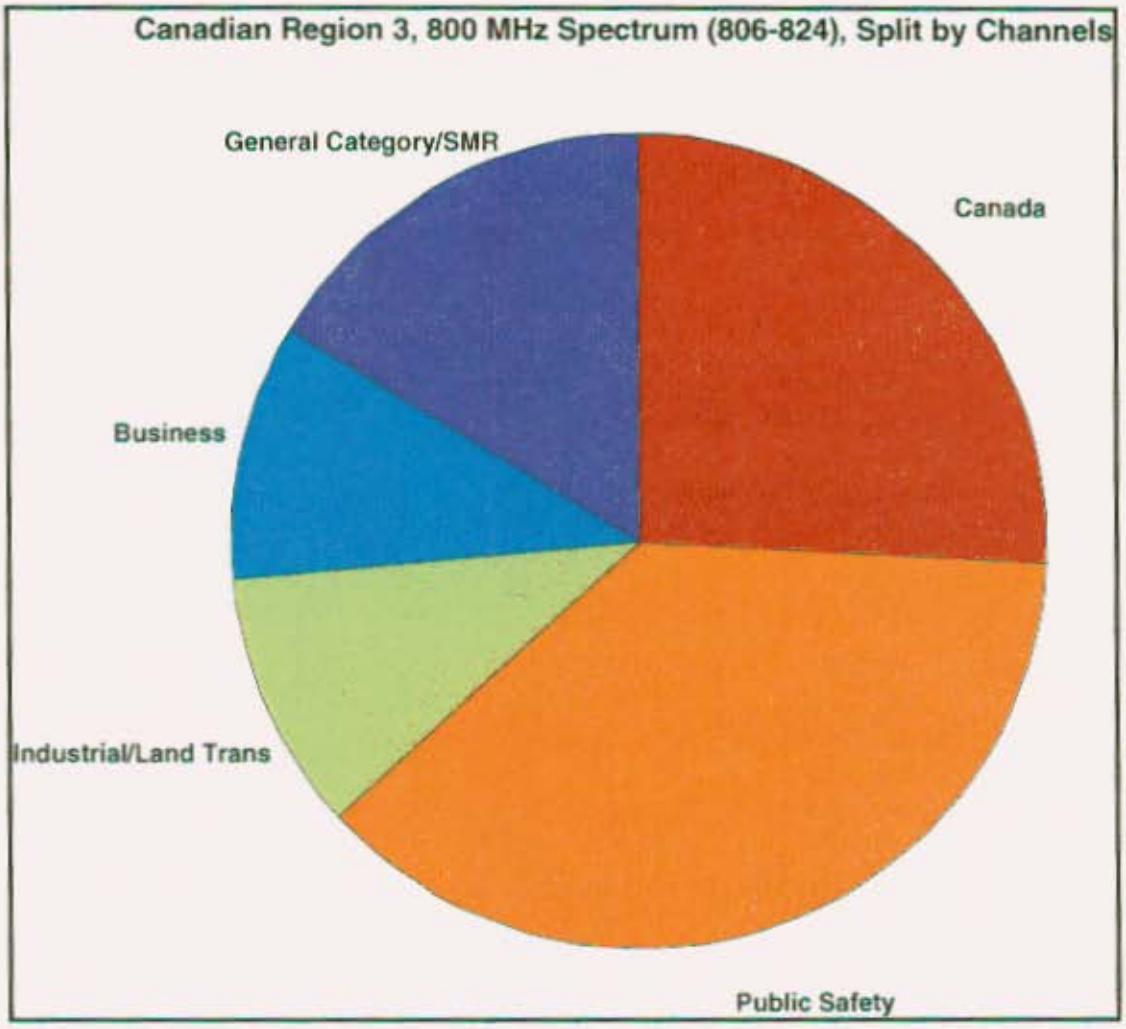


Figure D-3: US 800 MHz Band Plan, Canadian Region III, Split by Channels

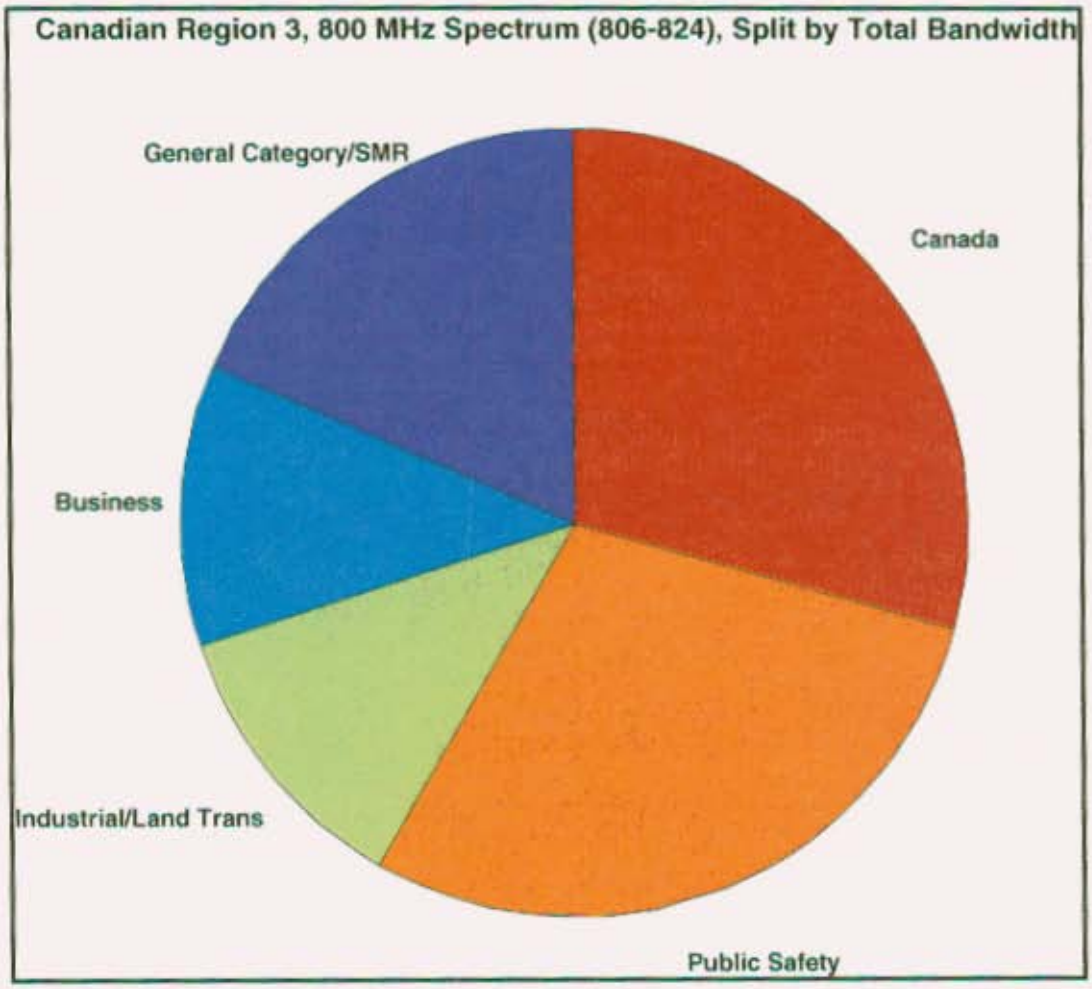


Figure D-4: US 800 MHz Band Plan, Canadian Region III, Split by Bandwidth

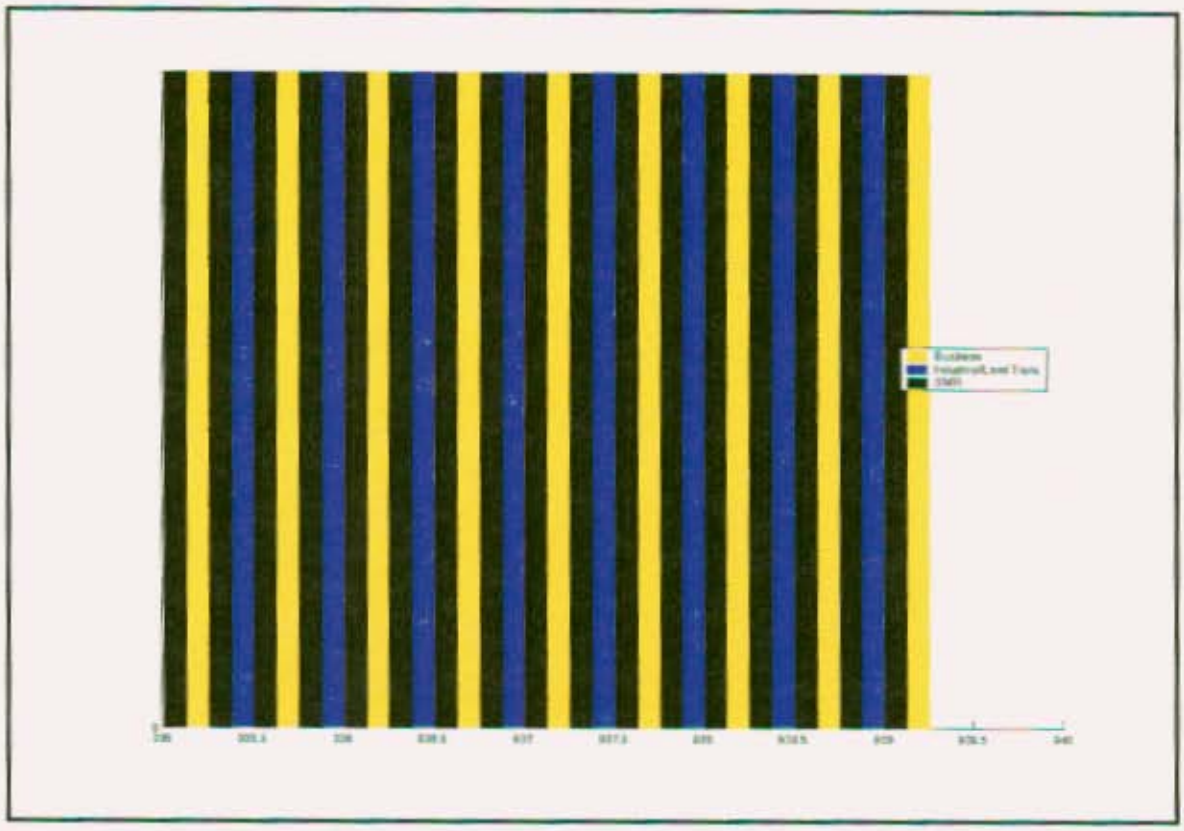


Figure D-5: US 900 MHz Band Plan, Canadian Region III

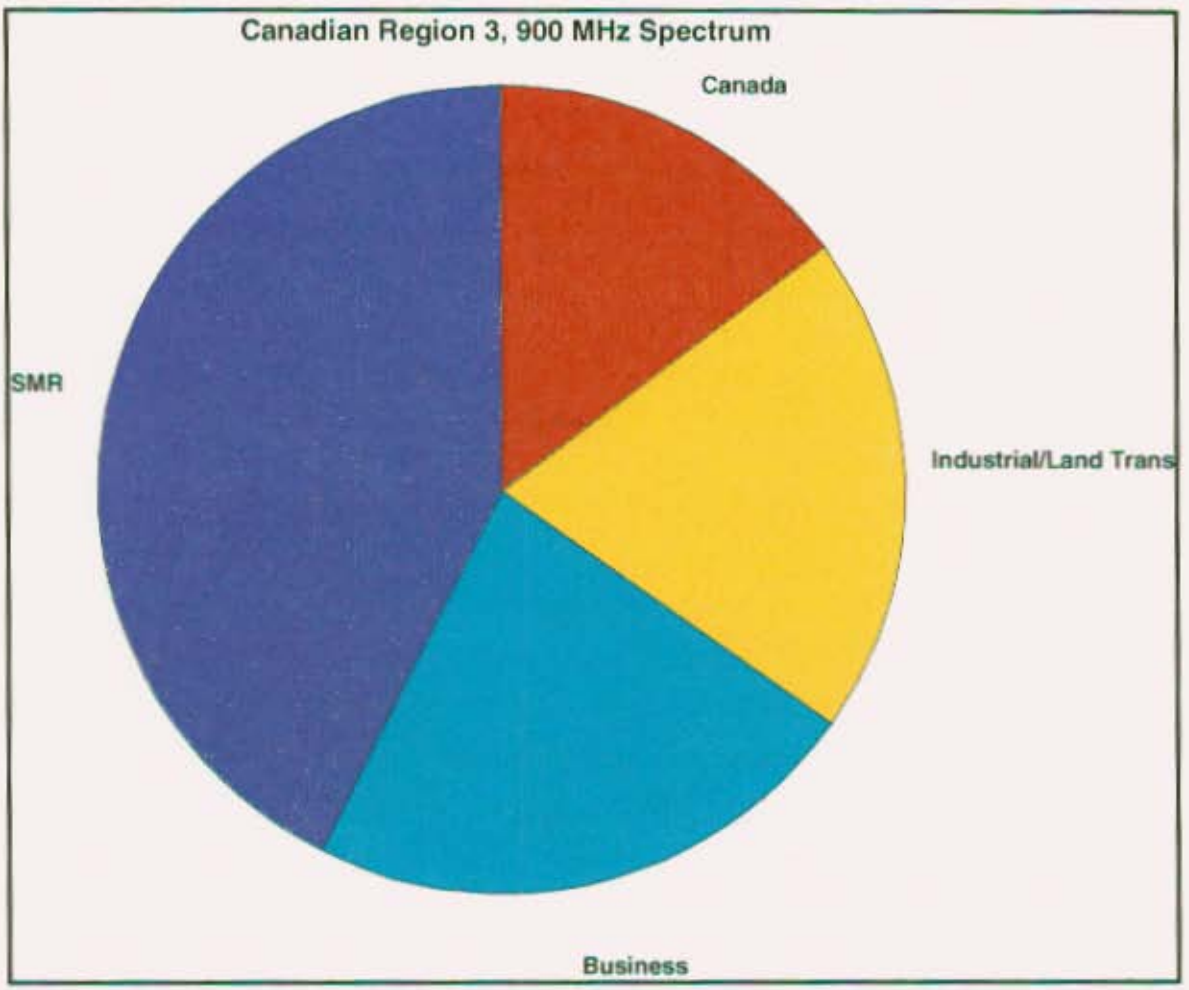


Figure D-6: US 900 MHz Band Plan, Canadian Region III, Split by Bandwidth

E. 800 MHz Band Plans - Canadian Border Regions VII and VIII

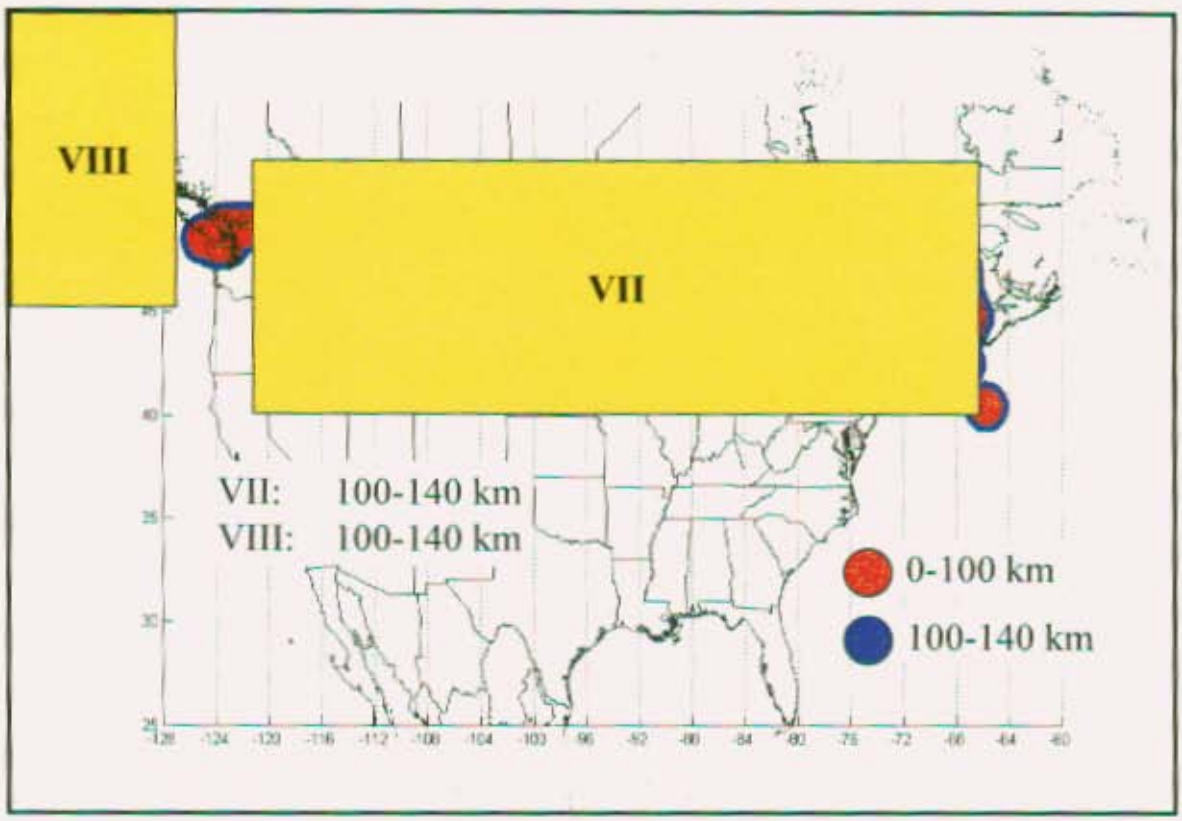


Figure E-1, Canadian Regions VII and VIII

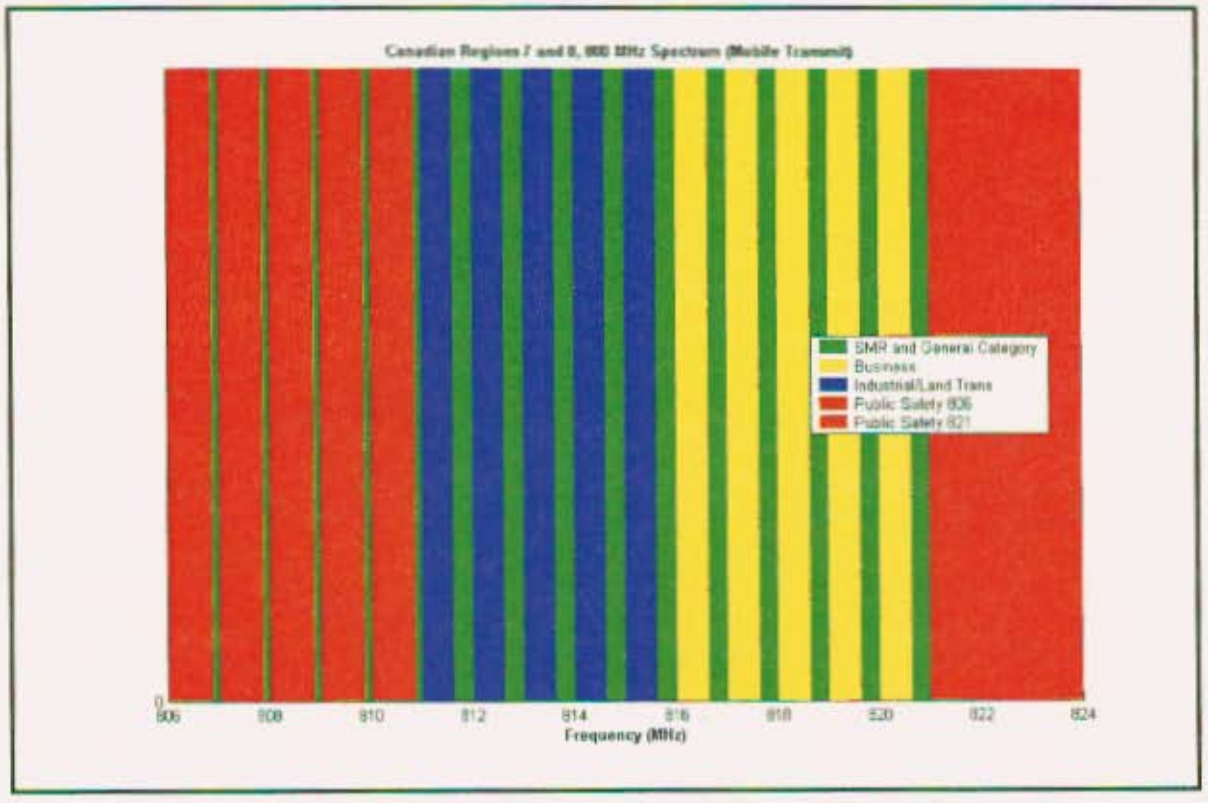


Figure E-2: US 800 MHz Band Plan, Canadian Regions VII and VIII

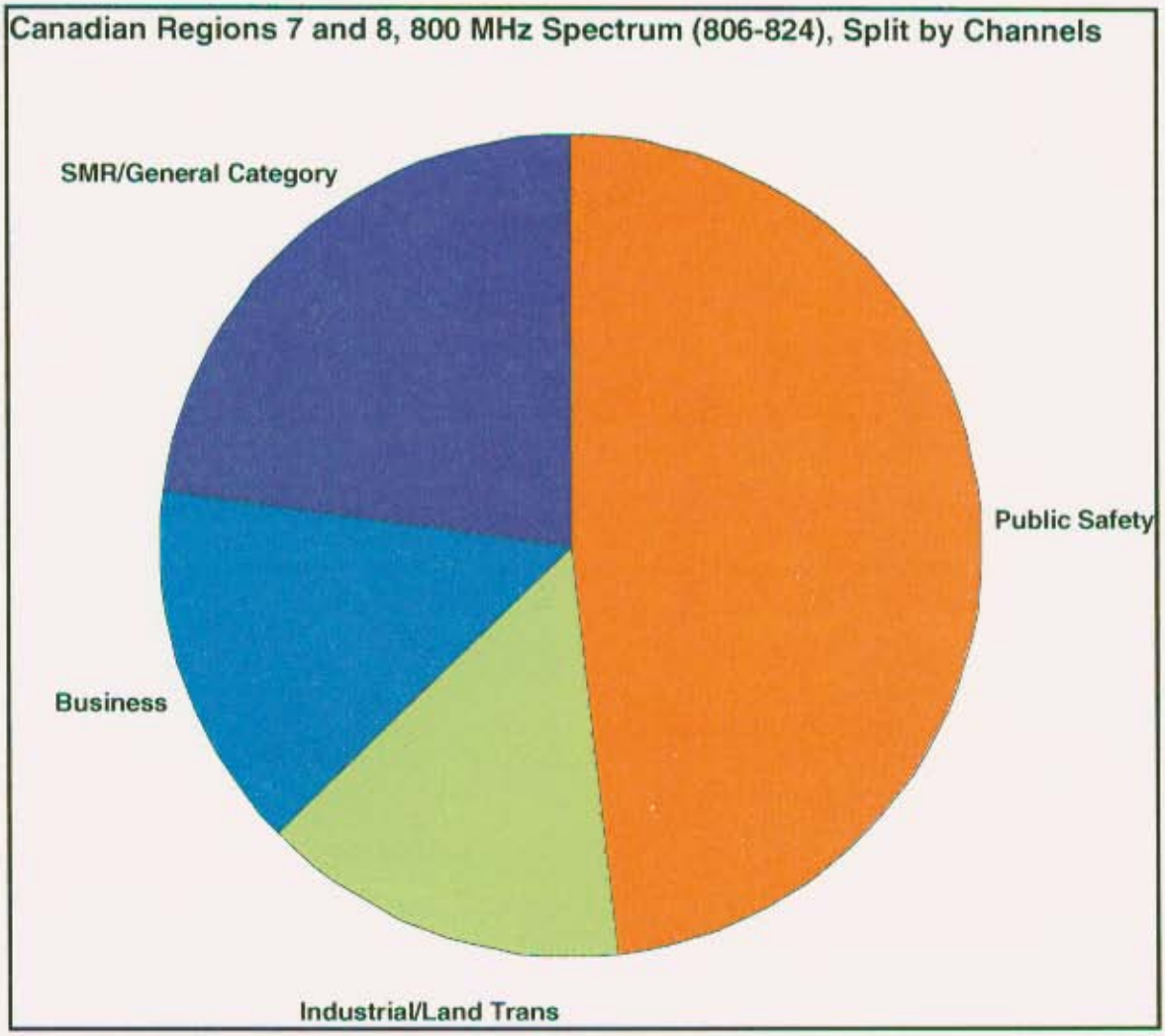


Figure E-3: US 800 MHz Band Plan, Canadian Regions VII and VIII, Split by Channels

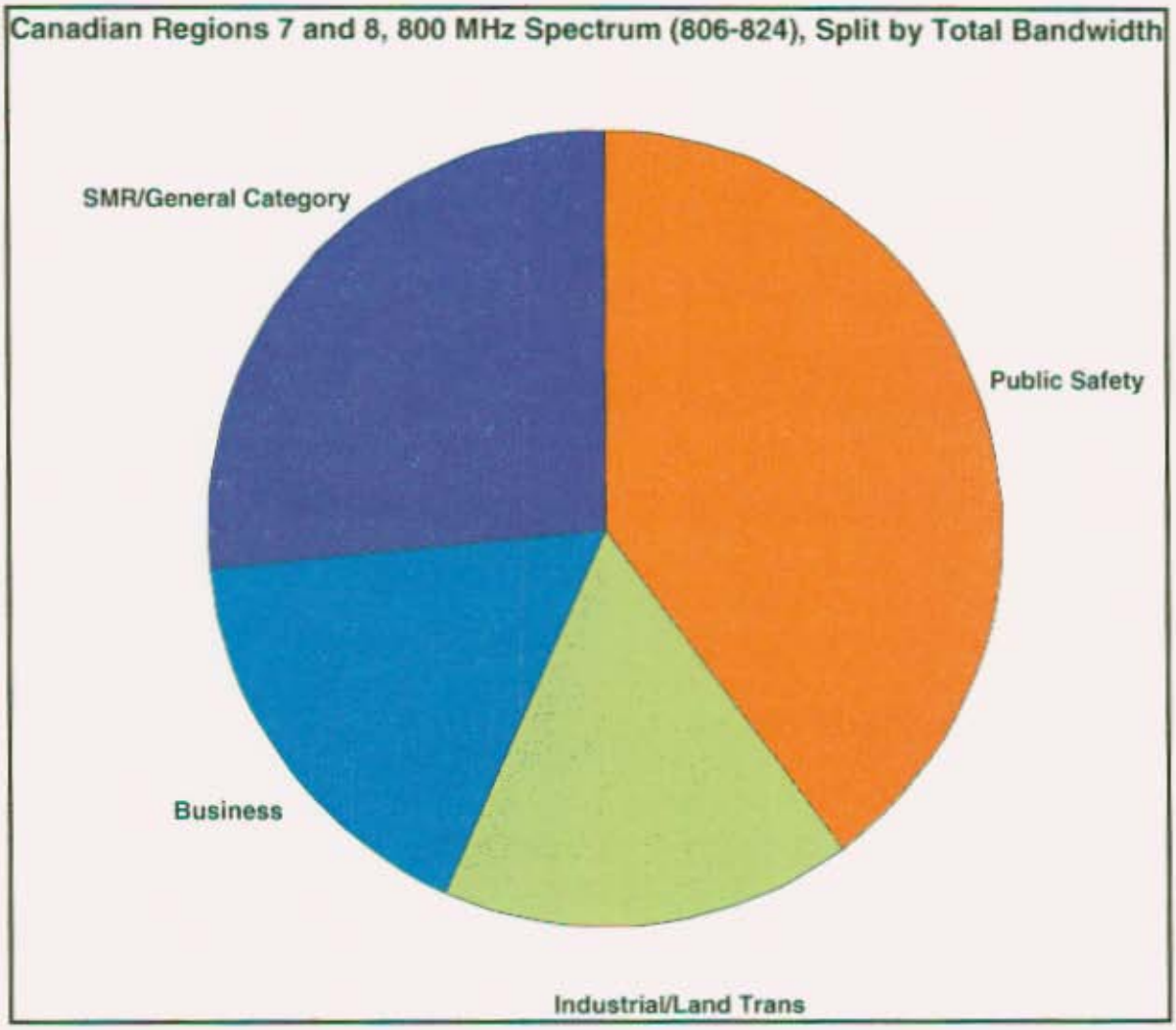


Figure E-4: US 800 MHz Band Plan, Canadian Regions VII and VIII, Split by Bandwidth

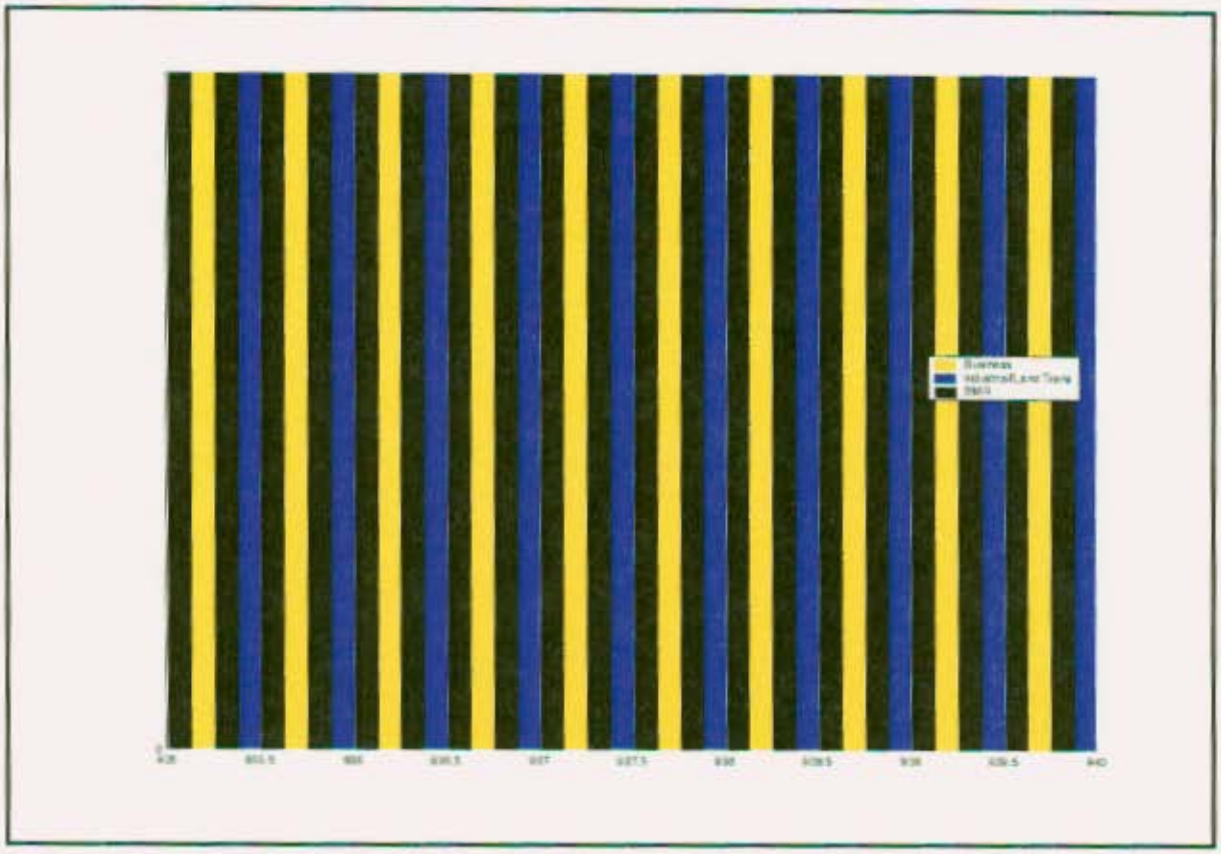


Figure E-5: US 900 MHz Band Plan, Canadian Regions VII and VIII

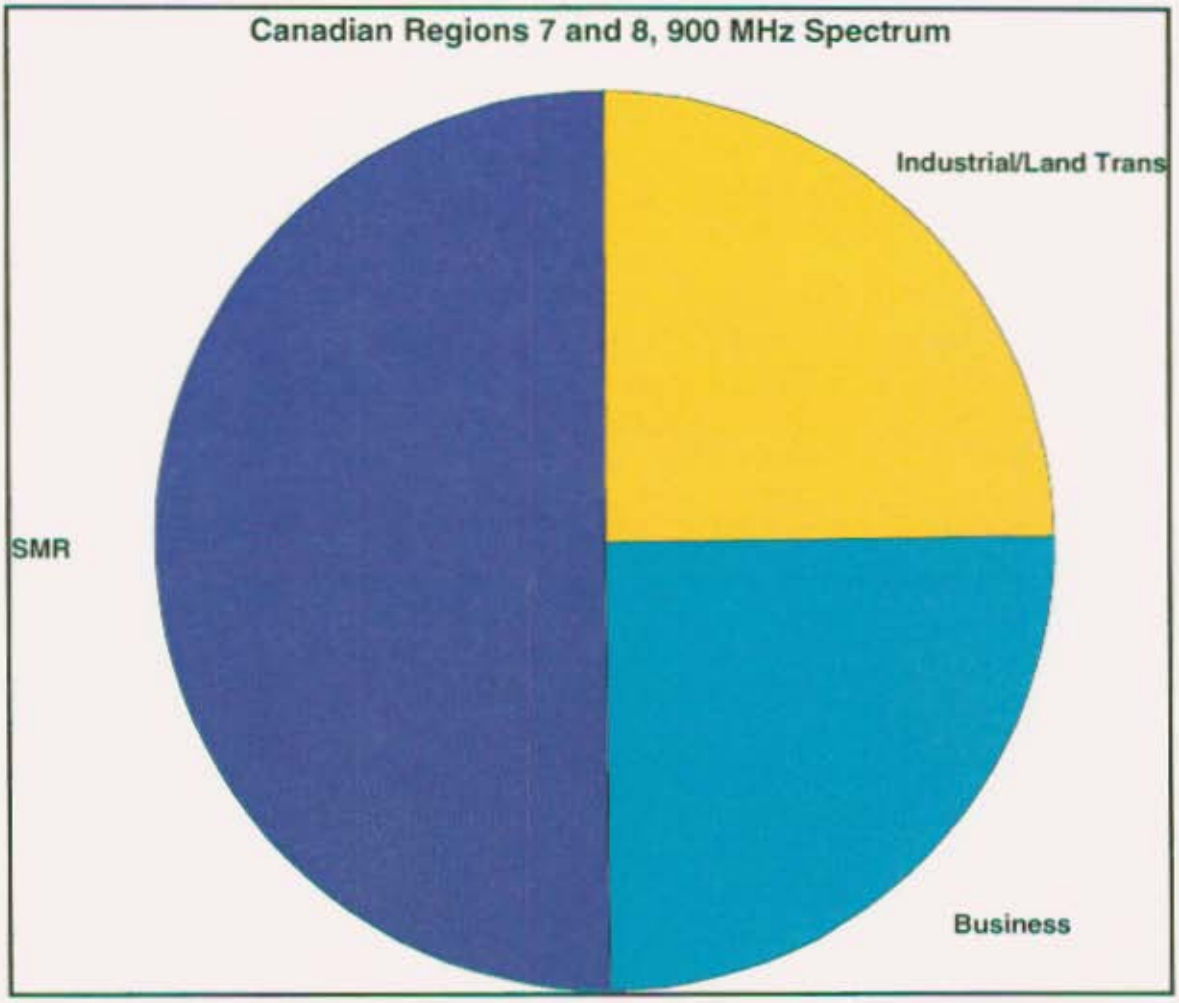


Figure E-6: US 900 MHz Band Plan, Canadian VII and VIII, Split by Bandwidth

F. Presentation: 700 MHz Television Effects on Public Safety

The following is material generated to document an investigation into the effects that only a few of the Canadian Digital television allotments would have on 700 MHz availability in Michigan and Ohio — both of which are currently constructing Statewide systems that will play a critical role in border security and homeland defense. These slides will clearly show that 700 MHz will not be available over large areas of both states until the Canadian Digital Television (DTV) Transition is fully completed. This DTV transition has yet to be defined, and therefore may not be completed for 10-15 years.

Approximate Impact Range of Dominant-Effect Canadian 700 MHz Stations

- with Focus on Impacts to Ohio and Michigan

Dominant Stations

- Television Channels 68 and 69 radiate directly into 700 MHz receivers, well above ground level (~150 ft)
- DTV 68 and 69 in Windsor are seen to cause the largest concern within the area.
  - They have the greatest impact
- Note that although adjacent-channel effects are shown here, the practical problem is co-channel
  - With 68 and 69 used, there is nowhere left to go within the allocation

Propagation Model

- No terrain data was available for Canada using our usual modeling tools, therefore an Okumura-Open model with diffraction losses was used
  - Knife-edge diffraction with losses considered over all primary blocking obstacles
- For LMR receivers at ~150'AGL, this model essentially parallels free space propagation – up to the point of terrain/diffraction losses/shadowing

Links

TV Station

- 80-83 dBm (NTSC ERP_{pk})
- -27 dB (into LMR ENBW
- +10 dB (LMR antenna gain)
- -12 dB (LMR Cross Polarization Loss)
- -12 dB (Peak NTSC to average DTV ERP)
- **Model ERP of ~16W (42 dBm)**

LMR Sensitivity

- -134 dBm (kTB at ENBW)
- + 10 dB (LMR Noise Figure)
- + 4 dB (assorted losses)
- **Model sensitivity of -120 dBm for co-channel case**
- **Model sensitivity of -75 dBm for adjacent-channel case (with 45 dB ACCPR)**

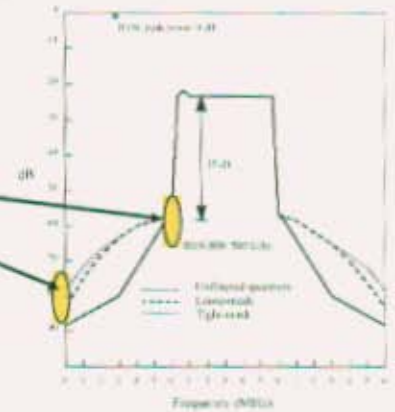
An interference-limited LMR design will reduce the effects of the television interference, but will require many more sites to provide system coverage.

DTV Adjacent Channel Power

Note that the noise levels at the sidebands of unfiltered DTV spectrum fall approximately -35 dB down at the near-edge of the band,

to -55 dB down at the far-edge.

These levels will be considered for the adjacent-channel cases.

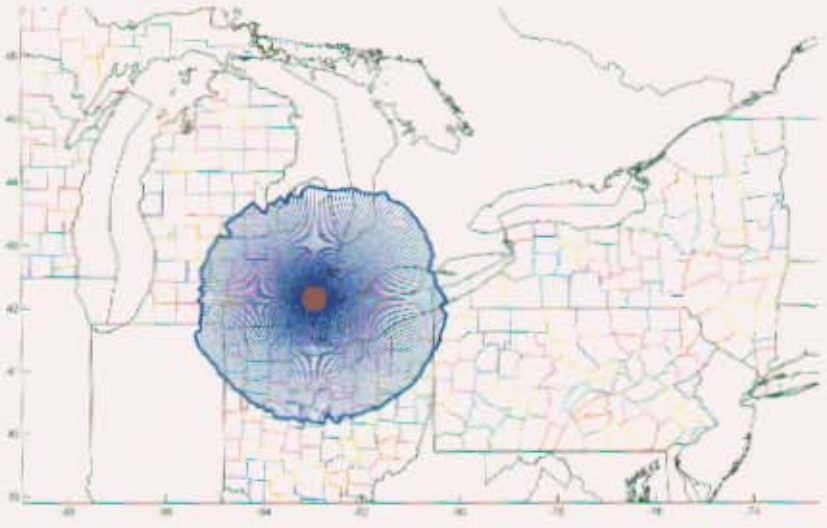


Ref: Figure 5: Proposed emission masks, Appendix 3, DIGITAL TELEVISION, Service Considerations and Allotment Principles, Prepared by, JTCAB Ad Hoc Group on DTV Planning Parameters, August 1997

(Average DTV ERP Label Removed for Clarity, power measured in 500 kHz Res. BW)

Canadian TV/DTV Interference Range

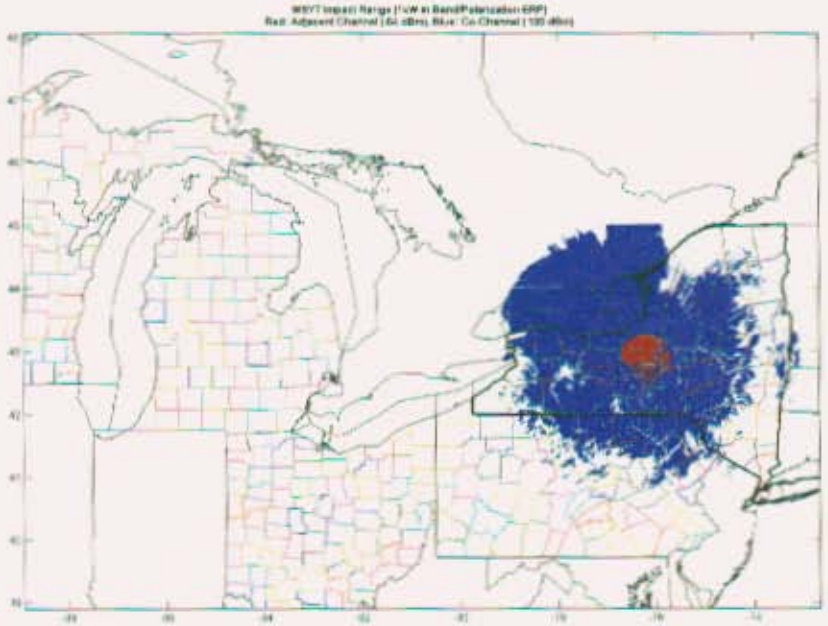
Approximate Range of Co-Channel (Blue) and Adjacent-Channel (Red) Effects At LMR Receivers (150')
Windsor Stations Channels 68 and 69



Is this Realistic?

- Compare the effects previously presented to effects from a detailed propagation model
  - 3-second, LULC, using multiple diffraction losses
  - See next slide showing a New York station
- Note that the effects spread very far from the station, despite:
  - The detailed study only went out **255 km** in range
  - New York's Terrain is **much** more rugged than Ohio's
  - The receiver height portrayed is only at **30 feet**
- Considering this, the impact ranges previously presented seem realistic
  - In fact, with circular polarization on the DTV transmitters, the XPOL would be closer to 3-6 dB, as opposed to 12 dB

TV Interference Range (TV-68)



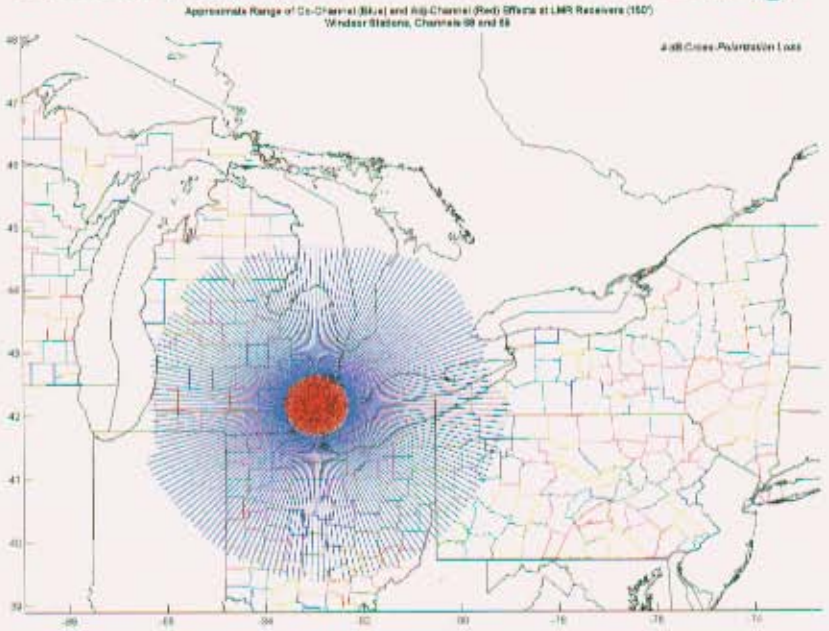
What if the Canadian DTV is Circularly/Elliptically Polarized?

- Most DTV is CP/EP
- Impacts would be much greater (by 6-9 dB)

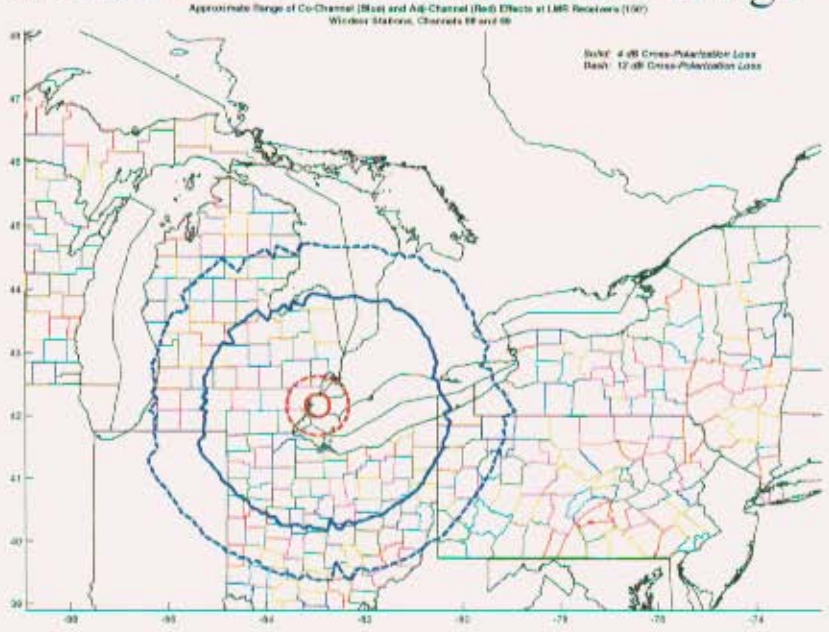
83 dBm (NTSC Peak ERP)
- 27 dB (coupling into LMR ENBW)
+ 10 dB (LMR antenna gain)
- 4 dB (LMR Cross Polarization Loss)
- 12 dB (Peak NTSC to DTV ERP)

Model ERP of ~100W (50 dBm)

Canadian TV/DTV Interference Range



Canadian TV/DTV Interference Range



Summary of Impact Distances

(TV-68 and 69 to LMR Base Receivers)

Case	Average Impact Distance (km)
Co-Channel (XPOL=12 dB)	207 km / 128 miles
Co-Channel (XPOL=4 dB)	299 km / 186 miles
Adj-Channel (XPOL=12 dB)	20 km / 12 miles
Adj-Channel (XPOL=4 dB)	52 km / 32 miles